CLAIMS

What is claimed is:

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1. An apparatus for use in a borehole in an earth formation comprising:

(a) a conducting tubular, said tubular having a damping portion for interrupting a flow of eddy currents;

(b) a transmitter positioned on a first side of said damping portion for propagating an electromagnetic field in the earth formation;

(c) a receiver positioned on a second side opposite said first side of said damping portion axially separated from said transmitter for receiving a temporal signal resulting from interaction of said electromagnetic field with said earth formation; and

(d) a processor for determining from said temporal signal a resistivity of said earth formation.

2. The apparatus of claim 1, wherein said damping portion further comprises at least one cut.

3. The apparatus of claim 2, wherein a non-conductive material is disposed within said cut.

4. The apparatus of claim 1, wherein said damping portion further comprises

(i) a first segment having a cut, and

(ii) a second segment with non-conductive material positioned on an outer face of said segment.

5. The apparatus of claim 1, wherein said damping portion further comprises a segment of pipe with a non-conductive material positioned on an outer face of said segment.

6. The apparatus of claim 1 wherein said non-conductive material comprises a ferrite.

7. The apparatus of claim 1 wherein said non-conductive material comprises a material with low magnetostriction.

8. The apparatus of claim 1, wherein said transmitter further comprises at least one coil oriented so as to induce a magnetic moment in one of (i) a longitudinal parallel to an axis of said tubular, and, (ii) a direction inclined to said longitudinal axis.

9. The apparatus of claim 1, wherein said receiver further comprises at least one coil having an orientation selected from (i) parallel to an axis of said tubular, and, (ii) inclined to an axis of said tubular.

10. The apparatus of claim 2 wherein said cut is a longitudinal cut.

11. The apparatus of claim 2 wherein said cut is a transverse cut.

12. The apparatus of claim 1 further comprising a device for extending said borehole.

13. The apparatus of claim 1 wherein said processor further determines a distance to a bed boundary in said earth formation.

14. A method of drilling an earth formation:

(a) conveying a bottom hole assembly (BHA) into said earth formation, said BHA including a tubular having a damping portion for interrupting a flow of eddy currents;

(b) using a transmitter positioned on a first side of said damping portion for producing an electromagnetic field in the earth formation;

(c) using a receiver positioned on a second side opposite said first side of said damping portion axially separated from said transmitter for receiving a temporal signal resulting from interaction of said first signal with said earth formation; and

(d) determining from said temporal signal said resistivity of said earth formation.

15. The method of claim 14, wherein said damping portion further comprises at least one cut.

16. The method of claim 15, wherein a non-conductive material is disposed within said cut.

17. The method of claim 14, wherein said damping portion further comprises

(i) a first segment having a cut, and

(ii) a second segment with non-conductive material positioned on an outer face of said segment.

18. The method of claim 14, wherein said damping portion further comprises a segment of pipe with a non-conductive material positioned on an outer face of said segment.

19. The method of claim 18 further comprising using a ferrite for said non-conductive material.

20. The method of claim 18 further comprising using a material with low magnetostriction for said non-conductive material.

21. The method of claim 14, wherein said transmitter further comprises at least one coil oriented so as to induce a magnetic moment in one of (i) a longitudinal

parallel to an axis of said tubular, and, (ii) a direction inclined to said longitudinal axis.

22. The method of claim 14, wherein said receiver further comprises at least one coil having an orientation selected from (i) parallel to an axis of said tubular, and, (ii) inclined to an axis of said tubular.

23. The method of claim 15 wherein said cut is a longitudinal cut.

24. The method of claim 15 wherein said cut is a transverse cut.

25. The method of claim 14 further comprising using a device on said BHA for extending said borehole.

26. The method of claim 14 further comprising determining a distance to an interface in said earth formation.

27. The method of claim 25 wherein (a) – (d) are carried out during continuing rotation of said BHA.

28. The method of claim 26 further comprising using said determined distance for controlling a drilling depth of said BHA.

1 29. The method of claim 26 wherein said interface comprises a bed boundary.

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1 30. The method of claim 26 wherein said interface comprises a fluid interface.

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